Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1-76. (Canceled)

77. (New) A method of forming a patterned layer during manufacture of an integrated circuit, comprising:

selectively irradiating with at least one type of radiant energy portions of a surface of a layer by electronically controlling a plurality of exposure elements; and

performing chemical processing of the surface including irradiated portions thereof to produce the patterned layer.

78. (New) The method of claim 77, wherein the type of radiant energy is selected from the group consisting of optical, X-ray, E-beam and particle beam.

79. (New) The method of claim 77, wherein the exposure elements are miniature sources of at least one of the following types of radiant energy: X-ray, Deep Ultra Violet and E-beam.

80. (New) The method of claim 77, wherein the exposure elements control passage of radiant energy from an external source.

81. (New) The method of claim 80, wherein the exposure elements control passage of radiant energy from an external source using at least one of the following

mechanisms: electromagnetic deflection, electrostatic deflection and mechanical shuttering.

82. (New) The method of claim 77, wherein chemical processing comprises etching.

83. (New) The method of claim 77, wherein chemical processing comprises radiation-induced chemical vapor deposition.

84. (New) The method of claim 77, further comprising separately focusing radiant energy emitted from the plurality of exposure elements.

85. (New) The method of claim 77, further comprising:

ceasing irradiating the surface;

shifting the plurality of exposure elements with respect to the surface; and

resuming irradiating the surface.

86. (New) A semiconductor processing lithography apparatus for maskless pattern generation comprising:

an array of radiation source cells arranged in rows and columns, the array being formed on a substrate;

control logic integrated with the substrate for individually controlling each cell, wherein each cell comprises:

an exposure source; and

an aperture through which the exposure source emissions pass onto a surface to be exposed.

87. (New) The apparatus of claim 86, wherein the radiation source cells expose separate areas of the surface to be exposed.

88. (New) The apparatus of claim 87, wherein the separate areas are predominantly non-overlapping.

89. (New) The apparatus of claim 87, wherein a substantial portion of the separate areas are exposed simultaneously.

90. (New) The apparatus of claim 86, wherein the emissions from the radiation source cells are selected from the group consisting of optical, Deep Ultra Violet, electron, and X-ray.

91. (New) A lithography pattern generation device comprising:

an array of cells arranged in row and columns, the array being formed on a substrate, each cell being individually controlled to permit passage of charged particles from an external source; and

control logic integrated with the substrate for individually controlling each cell;

wherein each cell comprises an aperture for passage of charged particles onto a surface to be exposed.

92. (New) The apparatus of claim 91, wherein the cells expose separate areas of the surface to be exposed.

93. (New) The apparatus of claim 92, wherein the separate areas are predominantly non-overlapping.

94. (New) The apparatus of claim 92, wherein a substantial portion of the separate areas are exposed simultaneously.

95. (New) The apparatus of claim 91, wherein the charged particles are selected from the group consisting of electrons and protons.

96. (New) The apparatus of claim 91, further comprising a demagnifying lens.

97. (New) A lithography pattern generation device comprising a plurality of exposure cells formed on a substrate where the exposure cells are controlled by control circuitry integrated on the substrate.

98. (New) The apparatus of claim 97, wherein each exposure cell is selected from the group consisting of a radiation source cell and a shuttered cell.

99. (New) The apparatus of claim 97, wherein the exposure cells expose separate areas of a surface to be exposed.

100. (New) The apparatus of claim 99, wherein the separate areas are predominantly non-overlapping.

101. (New) The apparatus of claim 99, wherein a substantial portion of the separate areas are exposed simultaneously.

102. (New) An apparatus for forming a patterned layer during manufacture of an integrated circuit, comprising:

a plurality of exposure elements; and

means for selectively irradiating with at least one type of radiant energy portions of a surface of a layer by electronically controlling the exposure elements.

103. (New) The apparatus of claim 102, wherein the at least one type of radiant energy is selected from the group consisting of optical, Deep Ultra Violet, X-ray, E-beam, and particle beam.

104. (New) The apparatus of claim 102, wherein the exposure elements are miniature sources of at least one of the following types of radiant energy: X-ray, Deep Ultra Violet, and E-beam.

105. (New) The apparatus of claim 102, wherein the exposure elements control passage of radiant energy from an external source.

106. (New) The apparatus of claim 105, wherein the exposure elements control passage of radiant energy from an external source using at least one of the following mechanisms: electromagnetic deflection, electrostatic deflection and mechanical shuttering.

107. (New) The apparatus of claim 102, comprising means for separately focusing radiant energy emitted from each of multiple different exposure elements.

108. (New) The apparatus of claim 102, comprising means for:

ceasing irradiating the surface;

shifting the exposure elements with respect to the surface; and

resuming irradiating the surface.

109. (New) The apparatus of claim 86, further comprising at least one stress-controlled dielectric layer.

110. (New) The apparatus of claim 109, wherein the stress of the at least one stress-controlled dielectric layer is less about 8×10^8 dynes/cm^2.

111. (New) The apparatus of claim 86, further comprising at least one elastic dielectric layer.

112. (New) The apparatus of claim 111, wherein the stress of the at least one elastic dielectric layer is less than about 8×10^8 dynes/cm^2.

113. (New) The apparatus of claim 91, further comprising at least one stress-controlled dielectric layer.

114. (New) The apparatus of claim 113, wherein the stress of the at least one stress-controlled dielectric layer is less about 8×10^8 dynes/cm^2.

115. (New) The apparatus of claim 91, further comprising at least one elastic dielectric layer.

116. (New) The apparatus of claim 115, wherein the stress of the at least one elastic dielectric layer is less than about 8×10^8 dynes/cm^2.

117. (New) The apparatus of claim 102, further comprising at least one stress-controlled dielectric layer.

118. (New) The apparatus of claim 117, wherein the stress of the at least one stress-controlled dielectric layer is less about 8×10^8 dynes/cm^2.

119. (New) The apparatus of claim 102, further comprising at least one elastic dielectric layer.

120. (New) The apparatus of claim 119, wherein the stress of the at least one elastic dielectric layer is less than about 8×10^8 dynes/cm^2.

121. (New) A semiconductor processing lithography apparatus for maskless pattern generation comprising:

an array of radiation source cells arranged in rows and columns, the array being formed on a substrate;

a stress-controlled dielectric layer formed on the substrate; and

control logic integrated with the substrate for individually controlling each cell, wherein each cell comprises:

an exposure source; and

an aperture through which the exposure source emissions pass onto a surface to be exposed.

122. (New) The apparatus of claim 121, wherein the radiation source cells expose separate areas of the surface to be exposed.

123. (New) The apparatus of claim 122, wherein the separate areas are predominantly non-overlapping.

124. (New) The apparatus of claim 122, wherein a substantial portion of the separate areas are exposed simultaneously.

125. (New) The apparatus of claim 121, wherein the emissions from the radiation source cells are selected from the group consisting of optical, Deep Ultra Violet, electron, and X-ray.

126. (New) The apparatus of claim 121, wherein the stress of the at least one stress-controlled dielectric layer is less about 8×10^8 dynes/cm^2.

127. (New) The apparatus of claim 121, further comprising at least one elastic dielectric layer.

128. (New) The apparatus of claim 127, wherein the stress of the at least one elastic dielectric layer is less than about 8×10^8 dynes/cm^2.

129. (New) A lithography pattern generation device comprising:

an array of cells arranged in row and columns, the array being formed on a substrate, each cell being individually controlled to permit passage of charged particles from an external source;

a stress-controlled dielectric layer formed on the substrate; and

control logic integrated with the substrate for individually controlling each cell;

wherein each cell comprises an aperture for passage of charged particles onto a surface to be exposed.

130. (New) The apparatus of claim 129 wherein the cells expose separate areas of the surface to be exposed.

131. (New) The apparatus of claim 130, wherein the separate areas are predominantly non-overlapping.

132. (New) The apparatus of claim 130, wherein a substantial portion of the separate areas are exposed simultaneously.

133. (New) The apparatus of claim 129, wherein the charged particles are selected from the group consisting of electrons and protons.

134. (New) The apparatus of claim 129, further comprising a demagnifying lens.

135. (New) The apparatus of claim 129, wherein the stress of the at least one stress-controlled dielectric layer is less about 8×10^8 dynes/cm^2.

136. (New) The apparatus of claim 129, further comprising at least one elastic dielectric layer.

137. (New) The apparatus of claim 136, wherein the stress of the at least one elastic dielectric layer is less than about 8×10^8 dynes/cm^2.

138. (New) An apparatus for forming a patterned layer during manufacture of an integrated circuit, comprising:

a plurality of exposure elements formed on a substrate;

a stress-controlled dielectric layer formed on the substrate; and

means for selectively irradiating with at least one type of radiant energy portions of a surface of a layer by electronically controlling the exposure elements.

139. (New) The apparatus of claim 138, wherein the at least one type of radiant energy is selected from the group consisting of optical, Deep Ultra Violet, X-ray, E-beam, and particle beam.

140. (New) The apparatus of claim 138, wherein the exposure elements are miniature sources of at least one of the following types of radiant energy: X-ray, Deep Ultra Violet, and E-beam.

141. (New) The apparatus of claim 138, wherein the exposure elements control passage of radiant energy from an external source.

142. (New) The apparatus of claim 141, wherein the exposure elements control passage of radiant energy from an external source using at least one of the following mechanisms: electromagnetic deflection, electrostatic deflection and mechanical shuttering.

143. (New) The apparatus of claim 138, comprising means for separately focusing radiant energy emitted from each of multiple different exposure elements.

144. (New) The apparatus of claim 138, comprising means for:

ceasing irradiating the surface;

shifting the exposure elements with respect to the surface; and

resuming irradiating the surface.

145. (New) The apparatus of claim 138, wherein the stress of the at least one stress-controlled dielectric layer is less about 8×10^8 dynes/cm^2.

146. (New) The apparatus of claim 138, further comprising at least one elastic dielectric layer.

147. (New) The apparatus of claim 146, wherein the stress of the at least one elastic dielectric layer is less than about 8×10^8 dynes/cm^2.